PUGACHEVA, A.I. (Stanislav (obl.), ul. Lomonosova, 23, kv.3)

Characteristics of collateral circulation of the rectum on an experiment. Arkh.anat.gist.i embr. 38 no.4:14-21 Ap '60. (MIRA 14:5)

1. Kafedra normal'noy anatomii (zav. - prof. Ye.P.Mel'man) Stanislavskogo meditsinskogo instituta.
(RECTUM--BLOOD SUPPLY)

S/056/63/044/002/017/065
B102/B186

AUTHORS: Vavilov, Yu. N., Pugacheva, G. I., Fedorov, V. M.

TITLE: The muon groups near the axis of extensive air showers

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 2, 1963, 487-492

TEXT: An arrangement of hodoscope and G-M counters, a cloud chamber with seven brass plates (120 g/cm^2 each) as muon detector and a Cherenkov counter (5 m high, basic diameter 6.5 m) for better location of the shower axis, was exposed to extensive air showers ($10^3 \leq N \leq 10^5$) at sea level (Moscow). The Cherenkov counter was filled with water which served both as radiator and as filter. Between this counter and the cloud chamber there was a 16.5-cm thick lead plate to absorb the electron-photon avalanches due to π^0 decays in the water. Thus the matter above the cloud chamber amounted to 700 g/cm^2. A total of 1940 hodoscope counters (0.01 m^2 each) arranged topmost, served for determining the power and position of the shower axis and two other groups of 48 counters each were arranged 8 m distant from the center of the apparatus. The detection units

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were connected in triple and double coincidence. The following results were obtained:

number of muons per group (n_μ)	2	3	4
number of groups with given n_μ intensity	20	5	2
mean of the shower	$1.8 \cdot 10^4$	$2.2 \cdot 10^4$	$1.5 \cdot 10^4$
mean distance of group center from shower axis, m	4.8	1.7	3.9

The results of an analysis of the spatial distributions of the shower axes and of the muon groups are compared with results obtained by S. N. Vernov et al. (ZhETF, 37, 1193, 1959; 39, 510, 1960). It was found that if muon groups with a diameter of ≤ 8 cm exist, their probability of appearance is at least 70 times smaller than that according to Vernov et al. The lowest energy of muons contained in one of the 27 groups selected was ≥ 3.5 Bev when entering the cloud chamber. If this limit is re- extrapolated to the top of the Cherenkov counter a value of ≥ 5 Bev is

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obtained. The distribution of the distances between the muon trajectories in groups with two or more parallel tracks was analyzed in order to find out if there is a genetic relation between such muons. It was found that none exists for muons with track distances of $\geqslant 0.3$ m. There are 6 figures and 1 table.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Institute of Physics imeni P. N. Lebedev of the Academy of Sciences USSR)

SUBMITTED: September 13, 1962

Card 3/3

VAVILOV Yu.N., [illegible], V.I., PETROV, V.M.

Importance of underwater measurements of μ-meson intensity at great depths. Izv. AN SSSR. Ser. fiz. 28 no.11 1859-1860 N '64. (MIRA 18:12)

1. Fizicheskiy institut im. P.N. Lebedeva AN SSSR.

L 41016-65 EWT(m)/T/EWA(m)-2
ACCESSION NR: AP5007708 S/0367/65/001/001/0080/0083

AUTHOR: Vavilov, Yu. N.; Pugacheva, G. I.; Fedorov, V. M.

TITLE: The analysis of Mu-meson absorption in matter at large depths

SOURCE: Yadernaya fizika, v. 1, no. 1, 1965, 80-83

TOPIC TAGS: Mu meson absorption, photonuclear energy loss, deep muon absorption, Mu meson energy spectrum, high energy muon, cosmic ray, photon cross section

ABSTRACT: Experimental data concerning the intensity of cosmic ray μ-mesons at large depths are of importance in connection with the question of energy losses of high energy μ-mesons and their energy spectrum. Best known at the present time are the so-called photonuclear losses, and it is important to obtain an estimate of the accuracy with which one can determine the magnitude of the photonuclear μ-meson losses from the experimental absorption curves. Consequently, the authors analyzed the solutions of the kinetic equation for the passage of muons through thick layers of matter. The accuracy with which the relative role of the muon photonuclear losses can be determined has been found by comparing the curves of the intensity of the muons against the depth in earth and in water

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L 41016-65
ACCESSION NR: AP5007708

(for data in water see Izv. AN SSSR, seriya fiz., 28, 1857, 1964). Limits due to the present uncertainty concerning the photonuclear and electromagnetic losses of the muon energy have been established for the possible values of the energy spectrum index of μ-mesons in the energy region $>10^{12}$ eV. Knowing the photonuclear losses, one can theoretically find the photonuclear cross section of virtual photons of the electromagnetic muon field. Assuming the applicability of the theory of peripheral collisions, this cross section coincides with the cross section of real photons within the comparable frequency range. "The authors thank G. T. Zatsepin and V. M. Maksimenko for valuable remarks and the evaluation of the problem." Orig. art. has: 1 formula and 3 figures.

ASSOCIATION: Fizicheskiy institut im. P. N. Lebedeva Akademii nauk SSSR (Physics Institute of the Academy of Sciences, SSSR)

SUBMITTED: 27Jun64 ENCL: 00 SUB CODE: NP

NO REF SOV: 001 OTHER: 003

Card CC 2/2

L 36936-66 EWT(1)/FCC GW

ACC NR: AT6023555 SOURCE CODE: UR/3095/66/036/000/0031/0036

AUTHOR: Vavilov, Yu. N.; Nelepo, B. A.; Pugacheva, G. I.; Fedorov, V. M.

ORG:

TITLE: Device for measuring cosmic-ray intensity at great depths

SOURCE: AN UkrSSR. Morskoy gidrofizicheskiy institut. Trudy, v. 36, 1966, Metody i pribory dlya issledovaniya fizicheskikh protsessov v okeane (Methods and instruments for studying physical processes in the ocean), 31-36

TOPIC TAGS: cosmic ray, Cherenkov counter, bremsstrahlung, photonuclear energy, electromagnetic field, atomic nucleus, COSMIC RAY INTENSITY, OCEAN PROPERTY

ABSTRACT: Ten times less cosmic rays than γ-rays are absorbed in water. Cosmic rays recorded in ground with a water equivalent of 20-m depth consist of μ-mesons as particles with the most penetrating ability. The absorption of μ-mesons by matter during interaction may be computed by the energy loss using the formula

$$\frac{dE}{dx} = a + (b_t + b_p + b_{ya})E,$$

where E is the energy of a μ-meson, x is the depth of the absorber, expressed in

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g/cm^2, and a characterizes the loss of speedy particles by ionization; a increases according to a logarithmic law of energy, b_t expresses the loss of μ-mesons by bremsstrahlung, b_p expresses the energy loss by generation of electron and positron pairs by a μ-meson, b_{ya} expresses the loss of photonuclear energy of a μ-meson generating electron nuclear showers. The electromagnetic field of a μ-meson is able to interact with atomic nuclei. Cherenkov counters are used for measurements of μ-meson intensity of great depths. The counter is spherically shaped and filled with water; the inside paint diffuses light and has a reflection coefficient of 90%. As a μ-meson crosses the diameter of the sphere, it generates $2 \cdot 10^4$ photons of Cherenkov radiation in the spectral range 2900—6000 Å, which is recorded by the Cherenkov counter. The addition of a little fluorescent salt to the water in the counter transfers photons of Cherenkov radiation from the 2900—3500-Å range to the 4500—5500-Å range, in which the maximum sensitivity of photocathodes is found. The effectiveness of recording single μ-mesons entering the counter was 99%, as was determined by a special experiment. Data on the intensity of cosmic rays at sea level and preliminary data at greater depths are given in a table in the original article. The authors express thanks to Professor A. G. Kolesnikov for permission to work in FIAN and MGIANUSSR and also to the heads of the Departments of Physics and Physics of the Sea of Moscow State University, for their help. Orig. art. has: 1 table, 2 figures, and 2 formulas. [EG]

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 002/ ATD PRESS: 5038

KARABASH, A.G.; PEYZULAYEV, Sh.I.; SLYUSAREVA, R.L.; SOTNIKOVA, N.P.; SMIRNOVA-AVERINA, N.I.; SAMSONOVA, Z.N.; KRAUZ, L.S.; MOROZOVA, G.G.; ROMANOVICH, L.S.; SMIRENKINA, I.I.; LIPATOVA, V.M.; SAZANOVA, S.K.; PUGACHEVA, L.I.; USACHEVA, V.P.; VORONOVA, Ye.F.; GORBACHEV, P.D.; KOSTAREVA, F.A.; KOSTEREVA, N.T.; YELOVATSKAYA, A.I.; KUZNETSOVA, N.N.

Spectrochemical analysis of pure metals for impurities. Fiz. sbor. no.4:556-562 '58. (MIRA 12:5)
(Spectrochemistry)

MOCHUL'SKAYA, Yu.Ch.; SEMENYAK, B.I.; Prinimali uchastiye: PUGACHEVA, L.V.; RANTSEVA, M.I.; KUZNETSOVA, M.I.; TETERINA, N.N.; SABUROVA, I.N.

Dressing of kainite-langebeinite ores of the Stebnik ore deposit. Khim.prom. no.6:454-456 Je '62. (MIRA 15:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut galurgii i L'vovskiy filial Gosudarstvennogo soyuznogo instituta po proyektirovaniyu predpriyatiy gornokhimicheskoy promyshlennosti.
(Ore dressing)

ZAKHARENKO, I.P., kand.tekhn.nauk; PUGACHEVA, O.A.

Processing inlaid parquet with a hard-alloy instrument. Bum. i der. prom. no.3:24-28 Jl-S '63. (MIRA 17:2)

1. Ukrainskiy nauchno-issledovatel'skiy institut sinteticheskikh sverkhtverdykh materialov i instrumenta Gosplana UkrSSR.

ZAKHARENKO, I.P., kand.tekhn.nauk; PUGACHEVA, O.A.

Machining celluloid and wood with hard-alloy tools. Mashinostroitel' no.11:31 N '63. (MIRA 16:11)

PUGACHEVA, R., prepodavatel'

Method of teaching the subject of steel and pig iron." Prof.-tekh. obr. 18 no.11:12-13 N '61. (MIRA 14:11)

1. Tekhnicheskoye uchilishche No.1, Leningrad.
(Steel--Heat treatment)

KROPIVNITSKIY, Nikolay Nikolayevich; KUCHER, Aleksandr Mikhaylovich; PUGACHEVA, Raisa Viktorovna; SHORNIKOV, Petr Nikolayevich; MALYSHEV, N.A., inzh., retsenzent; SURIN, K.P., inzh., retsenzent; BLYUMBERG, V.A., kand.tekhn.nauk, red.; VARKOVETSKAYA, A.I., red.izd-va; CHFAS, M.A., red.izd-va; KONTOROVICH, A.I., tekhn.red.

[Technology of metals] Tekhnologiia metallov. Moskva, Gos.nauchno-tekhn.izd-vo mashinostroit.lit-ry, 1960. 499 p. (MIRA 13:7)

(Metals) (Metalwork)

p 3,1

PHASE I BOOK EXPLOITATION SOV/4590

Kropivnitskiy, Nikolay Nikolayevich, Aleksandr Mikhaylovich Kucher, Raisa Viktorovna Pugacheva, and Petr Nikolayevich Shornikov

Tekhnologiya metallov (Metals Technology) Moscow, Mashgiz, 1960. 499 p. Errata slip inserted. 40,000 copies printed.

Reviewers: N. A. Malyshev, Engineer, and K. P. Surin, Engineer; Ed.: V. A. Blyumberg, Candidate of Technical Sciences; Eds. of Publishing House: A. I. Varkovetskaya, and M. A. Chfas; Tech. Ed.: A. I. Kontorovich; Managing Ed. for Literature on Machine-Building Technology (Leningrad Department, Mashgiz): Ya. P. Naumov, Engineer.

PURPOSE: This textbook is intended for engineering trade school students.

COVERAGE: The textbook presents the material covered in the course on metals technology as established in the engineering trade educational program and approved by the Gosudarstvennyy Komitet Soveta Ministrov SSSR po professional'no-tekhnicheskomu obrazovaniyu (State Committee of the Council of Ministers USSR for trade and technical education). The fundamentals of physical metallurgy are analyzed.

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Metals Technology SOV/4590

Casting, pressworking, soldering, brazing, welding, cutting, bench working and electrical machining of metals are discussed. Concise information on nonmetallic materials, including plastics, is also given. The text describes various metal-cutting machine tools. No personalities are mentioned. There are no references.

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Metals Technology

AVAILABLE: Library of Congress (TS205.T42)

VK/dwm/fal
12-16-60

Card 12/12

KROPIVNITSKIY, N.N.; KUCHER, A.M., kand. tekhn. nauk;
PUGACHEVA, R.V.; SHORNIKOV, P.N.; BYCHKOV, P.P., kand.
tekhn. nauk, retsenzent; MALYSHEV, N.A., inzh., retsenzent

[Technology of metals] Tekhnologiia metallov. [By] N.N.
Kropivnitskii i dr. Izd.2., perer. i dop. Moskva, Izd-vo
"Mashinostroenie," 1964. 502 p. (MIRA 17:8)

KROPIVNITSKIY, Nikolay Nikolayevich; KUCHER, Aleksandr Mikhaylovich; PUGACHEVA, Raisa Viktorovna; SHORNIKOV, Petr Nikolayevich; MALYSHEV, N.A., inzh., retsenzent; SURIN, K.P., inzh., retsenzent; BLYUMBERG, V.A., kand. tekhn. nauk, red.; VORKOVETSKAYA, A.I., red. izd-va; CHFAS, M.A., red. izd-va; KONTOROVICH, A.I., tekhn. red.

[Technology of metals]Tekhnologiia metallov. [By] N.N.Kropivnitskii i dr. Moskva, Mashgiz, 1962. 499 p. (MIRA 15:9)

(Metals) (Metalwork)

L 14202-66 EWT(m)/EWP(j) RM

ACC NR: AP6002861 SOURCE CODE: UR/0286/65/000/024/0018/0019

INVENTOR: Gitis, S. S.; Aleksandrov, V. N.; Pugacheva, S. A.; Glaz, A. I.; Golubev, G. S.; Rad'ko, L. V.

ORG: none

TITLE: Preparative method for iso- and tere-phthaloyl chlorides. Class 12, No. 176884 [announced by Novomoskovskiy Branch of the State Scientific Research and Design Institute of the Nitrogen Industry and Products of Organic Synthesis (Novomoskovskiy filial gosudarstvennogo nauchno-issledovatel'skogo i proyektnogo institut azotnoy promyshlennosti i produktov organicheskogo sinteza)

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 24, 1965,18-19

TOPIC TAGS: isophthaloyl chloride, terephthaloyl chloride

ABSTRACT: An Author Certificate has been issued for a preparative method for iso- and tere-phthaloyl chlorides. The method involves treatment of methyl m- or p-toluate, respectively, with dry chlorine at 190—200C under UV light, followed by treatment of the chloride product with water. [SM]

SUB CODE: 07/ SUBM DATE: 06Feb65/ ATD PRESS: 4193

Card 1/1 UDC: 547.584'582.2.07

ACC NR: AP7005330 SOURCE CODE: UR/0181/67/009/001/0101/0105

AUTHOR: Pugacheva, T. S.

ORG: Institute of Nuclear Physics, AN UzSSR, Ulugbek (Institut yadernoy fiziki AN UzSSR)

TITLE: Influence of thermal oscillations on the propagation of chains of atom-atom collisions in crystals

SOURCE: Fizika tverdogo tela, v. 9, no. 1, 1967, 101-105

TOPIC TAGS: particle collision, crystal lattice vibration, energy scattering, transport property

ABSTRACT: This is a continuation of earlier work (Izv. AN UzSSR ser. fiz. v. 5, 76, 1966) where the chains of collisions due to the correlations between the atomic collisions in crystals (focusons and crowdions), where the distribution of such chains over the lengths was obtained without account of thermal oscillations. The present article takes into account thermal oscillations, which lead to additional energy losses. The calculation is made for the three-dimensional case at not too large initial angles and a wide range of energies. Recurrence relations are obtained between succeeding atom-velocity vectors along the chain. It is shown that, in contrast to the results obtained by R. S. Nelson et al. (Phil. Mag. v. 7, 1385, 1962), the thermal losses are finite when the energy exceeds the focusing energy, and consequently, such chains, which are most important in mass-transport processes, are

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ACC NR: AP7005330

capable of propagating. Orig. art. has: 2 figures and 11 formulas.

SUB CODE: 20/ SUBM DATE: 23May66/ ORIG REF: 003/ OTH REF: 007

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PUGACHEVA, T.S.

Concerning the theory of the properties of semiconductors in strong electric and magnetic fields. Izv. AN Uz. SSR. Ser. fiz.-mat. nauk no.5:19-34 '60. (MIRA 14:1)

1. Fiziko-tekhnicheskiy institut AN UzSSR.
(Semiconductors) (Magnetic fields)
(Electric fields)

87-15

9.4300 (3203, 1043, 1138)
24.7700 (1035, 1143, 1559)

S/166/60/000/005/002/008
C111/C222

AUTHOR: Pugacheva, T.S.

TITLE: On the Theory of Properties of Semiconductors in Strong Electric and Magnetic Fields

PERIODICAL: Izvestiya Akademii nauk Uzbekskoy SSR, Seriya fiziko-matematicheskikh nauk, 1960, No.5, pp.19-34

TEXT: The paper is written under the leading of Professor G.M.Avak'yants. The author considers semiconductors with overlapping energy zones (e.g. Ge having "light" as well as "heavy" holes). He seeks the distribution function and, with the aid of it, the mean energy and the mobility of the current carrier if the semiconductor is in strong or weak electric and magnetic fields.
The kinetic equations for the considered case were given in (Ref.1). In the present paper these equations are solved under the following simplifying assumptions: the electric and magnetic fields are homogeneous and constant with time, gradients of the concentration and temperature are missing, the reciprocal action with optical oscillations can be neglected. Under these restrictions, from the system given in (Ref.1) one obtains the system

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S/166/60/000/005/002/008
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On the Theory of Properties of Semiconductors in Strong Electric and Magnetic Fields

$$N_{\varepsilon 1}^{-1}\frac{\partial}{\partial\varepsilon}\left(N_{\varepsilon 1}\hat{Q}_1\right)+N_{\varepsilon 1}^{-1}\frac{\partial}{\partial\varepsilon}\left(N_{\varepsilon 2}S_1'\right)+W_{12}\left(f_1^{(0)}-f_2^{(0)}\right)=0, \qquad (1')$$

$$e\vec{E}v_1\frac{\partial f_1^{(0)}}{\partial\varepsilon}+\frac{e}{c}\frac{v_1}{p_1}\left[\vec{H}\vec{f}_1^{(1)}\right]+\left(\frac{v_1}{l_1}+\frac{v_2}{l'}\right)\vec{f}_1^{(1)}=0, \qquad (2')$$

$$N_{\varepsilon 2}^{-1}\frac{\partial}{\partial\varepsilon}\left(N_{\varepsilon 2}\hat{Q}_2\right)+N_{\varepsilon 2}^{-1}\frac{\partial}{\partial\varepsilon}\left(N_{\varepsilon 1}S_2'\right)+W_{21}\left(f_2^{(0)}-f_1^{(0)}\right)=0, \qquad (3')$$

$$e\vec{E}v_2\frac{\partial f_2^{(0)}}{\partial\varepsilon}+\frac{e}{c}\frac{v_2}{p_2}\left[\vec{H}\vec{f}_2^{(1)}\right]+\left(\frac{v_2}{l_2}+\frac{v_1}{l}\right)\vec{f}_2^{(1)}=0. \qquad (4')$$

Here $f_i^{(o)}$ and $f_i^{(1)}$ (i=1,2) are the symmetric and asymmetric part of the

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distribution function for the i-th zone; $N_{\mathcal{E}1}$ and $N_{\mathcal{E}2}$ are the densities of state per unit interval of the energy in the first and second zone; $\hat{Q}_i$ is the density of the energy flow caused by inner-zonal transitions in the presence of an external electric field; S'_i are the densities of the energy flows for a missing electrical field caused by the transitions of the carriers from the second zone to the first zone and reversely; $W_{12} = \frac{v_2}{l'}$, $W_{21} = \frac{v_1}{l}$, l' is the free length of path with respect to the scattering at the acoustic oscillations when the carrier goes over from the first into the second zone, l means the same for the reverse transition; l_i is the free length of path of the carriers in the i-th zone.

In the case $H = 0$ the author obtains from (1') - (4'):

(23) $f^{(o)}(\mathcal{E}') = C \exp\left\{-\mathcal{E}' + \alpha \ln(\mathcal{E}' + \alpha)\right\}$,

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where $\mathcal{E}' = \frac{\mathcal{E}}{kT}$ and α is given by

$$(24) \qquad \alpha = \frac{e^2 E^2}{6kTv_s^2 m_1^*} \frac{\frac{1}{l_2}\sqrt{\frac{m_1^*}{m_2^*}} + \frac{1}{l_1}\sqrt{\frac{m_2^*}{m_1^*}} + \frac{1}{l} + \frac{1}{l'}}{\sqrt{\frac{m_1^*}{m_2^*}}\left(\frac{1}{l_1 l_2} + \frac{1}{l l'}\right) + \frac{1}{l l'} + \frac{m_1^*}{m_2^*}\frac{1}{l_2 l'}} \times$$

$$\times \frac{1}{\frac{1}{l_1} + \frac{m_1^*+m_2^*}{\sqrt{m_1^* m_2^*}}\frac{1}{l'} + \left(\frac{m_2^*}{m_1^*}\right)^2 \left(\frac{1}{l_2} + \frac{m_1^*+m_2^*}{\sqrt{m_1^* m_2^*}}\frac{1}{l}\right)},$$

where v_s is the sound velocity. The constant C is determined from

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$$(28) \qquad \begin{cases} 4\pi \int f^{(o)}(\mathcal{E}) N_{\mathcal{E}1} d\mathcal{E} = n_1 \\ 4\pi \int f^{(o)}(\mathcal{E}) N_{\mathcal{E}2} d\mathcal{E} = n_2 \end{cases},$$

where n_i is the concentration of the carriers in the i-th zone.

For $\vec{f}_1^{(1)}$ and $\vec{f}_2^{(1)}$ from (2') and (4') it follows

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(16)

$$\begin{cases} \vec{f}_1^{(1)} = -e\vec{E}\dfrac{\partial f_1^{(0)}}{\partial \varepsilon}\dfrac{1}{\dfrac{1}{l_1}+\sqrt{\dfrac{m_1^*}{m_2^*}}\dfrac{1}{l'}} \\ \vec{f}_2^{(1)} = -e\vec{E}\dfrac{\partial f_2^{(0)}}{\partial \varepsilon}\dfrac{1}{\dfrac{1}{l_2}+\sqrt{\dfrac{m_2^*}{m_1^*}}\dfrac{1}{l}} \end{cases}$$

If now the distribution function is known then for the mean energies in both zones one obtains:

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$$(29)\qquad \begin{cases} \bar{\varepsilon}_1 = \dfrac{4\pi}{n_1}\displaystyle\int_0^\infty f^{(0)}(\varepsilon)\varepsilon N_{\varepsilon 1}\,d\varepsilon \\ \bar{\varepsilon}_2 = \dfrac{4\pi}{n_2}\displaystyle\int_0^\infty f^{(0)}(\varepsilon)\varepsilon N_{\varepsilon 2}\,d\varepsilon \end{cases}$$

and for the mobilities

$$(30)\qquad \begin{cases} \mu_1 = \dfrac{8\pi(m_1^* kT)^2}{3m_1^* n_1 \vec{E}}\displaystyle\int_0^\infty \vec{f}_1^{(1)}{}_{\varepsilon'}\,d\varepsilon' \\ \mu_2 = \dfrac{8\pi(m_2^* kT)^2}{3m_2^* n_2 \vec{E}}\displaystyle\int_0^\infty \vec{f}_2^{(1)}{}_{\varepsilon'}\,d\varepsilon' \end{cases}.$$

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Since the integrals (28), (29), (30) cannot be integrated with an f^0 given by (23), the author considers only the limit cases of a weak electric field ($\mathcal{E} \sim kT$, $\mathcal{E}' \sim 1$, $\alpha \ll 1$) and a strong field ($\alpha \sim E^2$, $\alpha \gg 1$, $\alpha \gg \mathcal{E}'$).
The case $H \neq 0$ is calculated with the same scheme, where the author assumes additionally that the interzonal transitions and the transitions in the interior of the zones are equally probable. Here for $f_1^{(1)}$ and $f_2^{(1)}$ one obtains:

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$$\vec{f}_1^{(1)} = -\frac{el}{kT\varphi}\frac{\partial f^{(0)}}{\partial \varepsilon'}\left\{\frac{\varphi^2\varepsilon'}{\varphi^2\varepsilon'+\eta}\vec{E} + \frac{\varphi\sqrt{\varepsilon'\eta'}}{\varphi^2\varepsilon'+\eta}\frac{[\vec{E}\vec{H}]}{H} + \right.$$

$$\left. + \frac{\eta}{\varphi^2\varepsilon'+\eta}\frac{\vec{H}(\vec{E}\vec{H})}{H^2}\right\}$$

$$\vec{f}_2^{(1)} = -\frac{el}{kT\varphi}\sqrt{\frac{m_1^*}{m_2^*}}\frac{\partial f^{(0)}}{\partial \varepsilon'}\left\{\frac{\varphi^2\varepsilon'}{\varphi^2\varepsilon'+\eta\left(\frac{m_1^*}{m_2^*}\right)^2}\vec{E} + \right. \qquad (40)$$

$$\left. + \frac{\frac{m_1^*}{m_2^*}\varphi\sqrt{\varepsilon'\eta'}}{\varphi^2\varepsilon'+\eta\left(\frac{m_1^*}{m_2^*}\right)^2}\frac{[\vec{E}\vec{H}]}{H} + \frac{\eta\left(\frac{m_1^*}{m_2^*}\right)^2}{\varphi^2\varepsilon'+\eta\left(\frac{m_1^*}{m_2^*}\right)^2}\frac{\vec{H}(\vec{E}\vec{H})}{H^2}\right\}$$

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On the Theory of Properties of Semiconductors in Strong Electric and Magnetic Fields

where φ and η are given by

(41) $$\varphi = 1+\left(\frac{m_2^*}{m_1^*}\right)^{3/2},$$

(42) $$\eta = \frac{e^2H^2l^2}{2c^2kTm_1^*}.$$

For $f^{(0)}(\varepsilon')$ it results the equation

$$\frac{\partial f^{(0)}}{\partial \varepsilon'}\left\{\frac{\xi}{\varphi F}\left[\frac{\varphi^3\varepsilon'+\eta\cos^2\beta}{\varphi^2\varepsilon'+\eta}+\sqrt{\frac{m_1^*}{m_2^*}}\,\frac{\varphi^3\varepsilon'+\left(\frac{m_1^*}{m_2^*}\right)^2\eta\cos^2\beta}{\varphi^2\varepsilon'+\left(\frac{m_1^*}{m_2^*}\right)^2\eta}\right]+\varepsilon'\right\}+$$

$$+\varepsilon' f^{(0)}(\varepsilon')=0. \qquad (43)$$

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On the Theory of Properties of Semiconductors in Strong Electric and Magnetic Fields

where β is the angle between E and H, while F is given by

$$F = 1+2\left(\frac{m_2^*}{m_1^*}\right)^{3/2}+2\left(\frac{m_2^*}{m_1^*}\right)^{5/2}+\left(\frac{m_2^*}{m_1^*}\right)^{4} \tag{44}$$

If the electric and magnetic fields are weak then there result the same results as in the case H = 0.
The author mentions B.I.Davydov. There are 3 Soviet references.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UzSSR (Physical-Technical Institute of the Academy of Sciences Uzbekskaya SSR)

SUBMITTED: March 5, 1960

Card 11/11

STARODUBTSEV, S.V., akademik; PUGACHEVA, T.S.; MIKHAELYAN, V.M.; LENCHENKO, V.M.

Kinetics of crystal nuclei formation in vitreous selenium. Dokl. AN SSSR 150 no.5:1091-1093 Je '63. (MIRA 16:8)

1. Institut yadernoy fiziki AN Uzbekskoy SSR. 2. AN Uzbekskoy SSR (for Starodubtsev).
(Selenium) (Crystallization)

57
56

L 12660-63 EWP(q)/EWT(m)/BDS AFFTC/ASD RDW/JD

ACCESSION NR: AP3002882 S/0020/63/150/005/1091/1093

AUTHOR: Starodubtsev, S. V. (Member, AN UzSSR); Pugacheva, T. S.; Mikhaelyan, V. M.; Lenchenko, V. M.

TITLE: Kinetics of formation of crystallization nucleus in vitreous selenium 27

SOURCE: AN SSSR. Doklady*, v. 150, no. 5, 1963, 1091-1093

TOPIC TAGS: crystallization nucleus, crystallization, selenium, vitreous selenium, ionized radiation, molecular chain rupture

ABSTRACT: An attempt is made to present a possibility for a logical description of the kinetic phenomena in the formation and growth of crystallization nuclei in vitreous selenium. It is a known fact that X-ray and other ionizing irradiations increase the crystallization process of amorphous selenium. It was found in a previous work that preliminary irradiations of vitreous selenium resulted in the increase of crystallization seeds N. Furthermore, a complicated dependence of N on the radiation dose D is observed. These facts are qualitatively explained by several

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L 12660-63
ACCESSION NR: AP3002882

general assumptions: (i) in order for the crystallization to proceed, it is necessary at first to destroy the polymeric molecules which then allow the spatial regrouping of chains. This is ordinarily accomplished thermally since vitreous selenium is thermally unstable. In the present study the ionized radiation method was used to initiate the destruction; (ii) the crystallization process consists of the formation of nuclei in the crystallization phase and its consequent growth. In order for this to take place, a minimum number of polymeric chain ruptures must occur, forming movable segments in the molecule which regroup and form the stable seed. Further growth takes place by the combination of these separate segments; (iii) The formation of ruptured chains in the irradiated field proceeds by two ways: through the recombination of ions during which the energy is released and which is sufficient for the rupture of the -Se-Se- bond, and through a secondary electronic excitation resulting in the dissociation. In both instances the generation rate is proportional to the intensity of the dose. Orig. art. has: 10 formulas.

ASSOCIATION: Institute of Nuclear Physics, Academy of Sciences, UzSSR

Card 2/3

L 45210-65 EWT(m)/T/EWA(m)-2
ACCESSION NR: AP5009148 S/0166/65/000/001/0048/0056

AUTHOR: Lenchenko, V. M.; Pugacheva, T. S.

TITLE: Contribution to the theory of scattering of fast charged particles in crystals

SOURCE: AN UzSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 1, 1965, 48-56

TOPIC TAGS: particle scattering, fast particle scattering, phonon emission, scattering cross section

ABSTRACT: The article is devoted to scattering of charged particles by the atoms of the material constituting a crystal. Earlier investigations were made under the assumption that for fast particles such collisions can be regarded as pair collisions with free atoms, and effects connected with the interaction of the atoms in the lattice can be neglected. It is shown that the pair-collision approximation is valid only for "short-range" collisions, when the energy transferred to the atom is sufficiently large. In the case of long-range glancing collisions, the momentum is transferred but not to a single atom but to the entire lattice as a whole, so

Card 1/2

L 45210-65
ACCESSION NR: AP5009148

that the scattering is accompanied by emission of one or several phonons, or else without change of energy at all (Mossbauer scattering). The cross section for the scattering of a fast charged particle in a crystal lattice is derived in general form, and the relative contributions made to the energy losses by single-phonon and multi-phonon processes are estimated. Collisions accompanied by formation of defects and by excitation of localized oscillations are also considered. It is pointed out in conclusion that the proposed method makes it possible to separate the collision region in which the energy losses go to phonon excitation. Orig. art. has: 36 formulas.

ASSOCIATION: Institut yadernoy fiziki AN UzSSR (Institute of Nuclear Physics, AN UzSSR)

SUBMITTED: 13Feb64 ENCL: 00 SUB CODE: NP, SS

NR REF SOV: 003 OTHER: 007

Card 2/2

[redacted]

[illegible]y of scattering of fast charged particles in crystals.
[illegible]z. Ser. fiz., mat. nauk 9 no.1:48-56 '65.
(MIRA 18:6)

[illegible] Institut yadernoy fiziki AN UzSSR.

ACC NR: AP7001182 SOURCE CODE: UR/0166/66/000/005/0076/0081

AUTHORS: Pugacheva, T. S.; Lenchenko, V. M.

ORG: Institute of Nuclear Physics, AN UzSSR (Institut yadernoy fiziki AN UzSSR)

TITLE: Energy structure of cascade and correlated atom-atom collision chains

SOURCE: AN UzSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 5, 1966, 76-81

TOPIC TAGS: crystal structure analysis, nuclear radiation, collision, cascade

ABSTRACT: The type of crystal structure is analyzed and the energy structure is determined for atom-atom collision cascades in solid bodies. The function $S(E, \varepsilon)$ is introduced to determine the number of collisions initiated by primary atoms of energy E. This leads to the integral equation

$$S(E, \varepsilon) = \delta(E-\varepsilon) + \int_0^E S(E', \varepsilon)\,[1 - W_A(E)']\,G(E, E')\,dE' \qquad (1)$$

where G and W are probability functions. For a solid-sphere potential G is given simply by E^{-1} and the above equation is integrated immediately. A more general method is described where $F(E, \varepsilon)$, representing the complete range of cascade particles, is given by

$$F(E, \varepsilon) = \int_{\varepsilon}^{E} \frac{dE'}{\gamma(E')} n_a \int_{\varepsilon}^{E'} \sigma(E', E_1)\,S(E_1, \varepsilon)\,dE_1 + \Lambda(\varepsilon)\,\delta(E-\varepsilon) + \varphi^{-1}(\varepsilon). \qquad (2)$$

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ACC NR: AP7001182

The solution of this equation is given by $F(E,\varepsilon)=\Lambda(\varepsilon)S(E,\varepsilon)$, where

$$S(E,\varepsilon)=\delta(E-\varepsilon)+\frac{2E}{\varepsilon^2+a^2}. \qquad (3)$$

If one neglects inelastic and collective collision losses (a = 0), then the expression for S coincides with that given by equation (1) with $W_k = 0$. The remainder of the paper is devoted to calculating the atom-atom collision chain distributions. Curves are obtained for Cu <110> showing combinations of initial magnitudes of angle and energy for which the chain length has an exact, given magnitude. Orig. art. has: 22 equations and 3 figures. [04]

SUB CODE: 20/ SUBM DATE: 20May65/ ORIG REF: 003/ OTH REF: 013 / ATD PRESS: 5110

Card 2/2

SVEDE-SHVETS, M.I.; EYDUK, Yu.A.; YENINA, V.A.; VODOP'YANOVA, L.S.; TRUSHIN, Yu.V.; Prinimali uchastiye: DZENELADZE, Zh.O.; ZHUKOVA, Ye.A.; ISAKOVA, Z.S.; PUGACHEVA, V.P.; IGUMNOV, V.Ye.

Thermoelectric characteristics of sintered alloys based on tungsten and molybdenum. Sbor. trud. TSNNICHM no.30:7-16 '63. (MIRA 16:10)

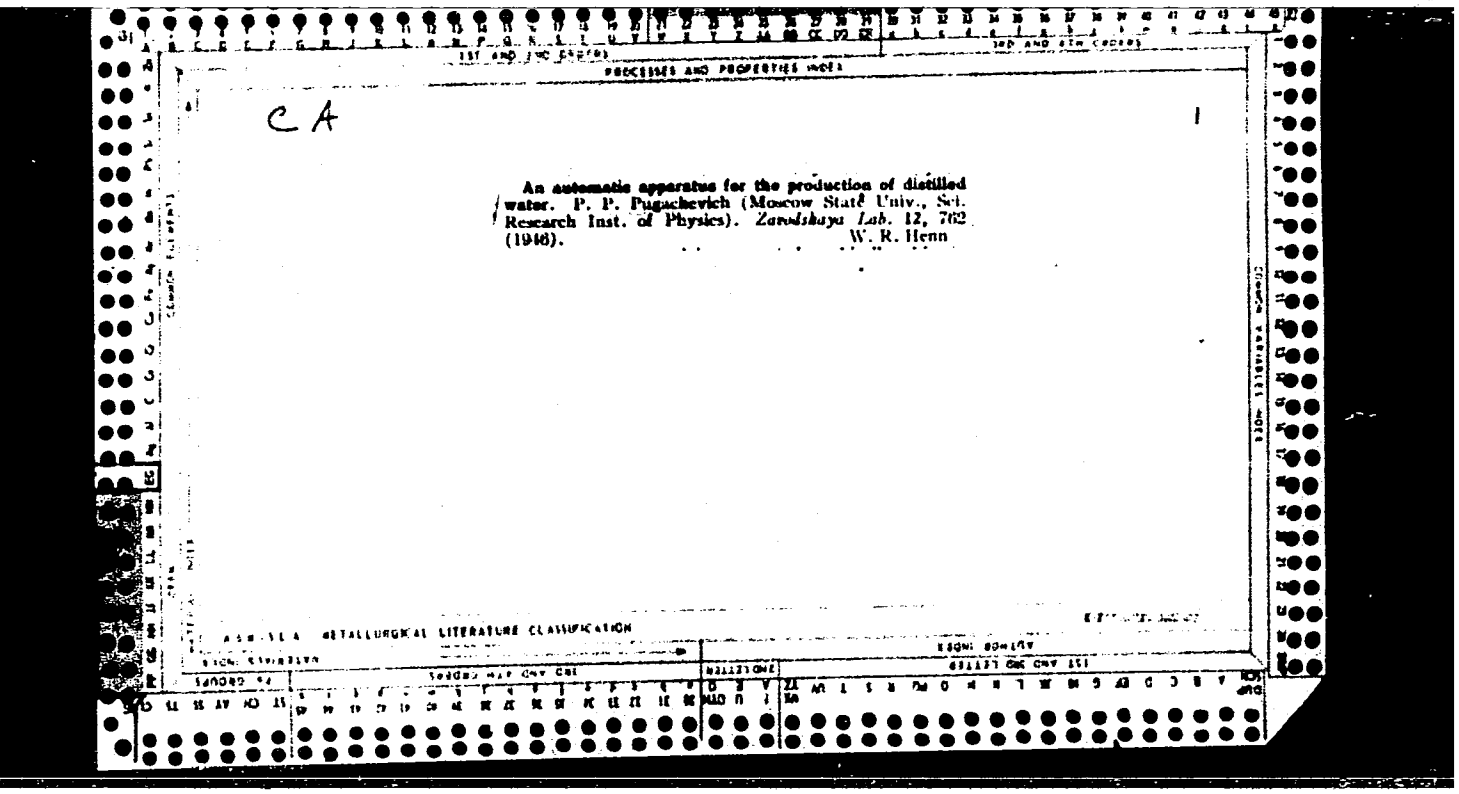
(Tungsten-molybdenum alloys--Thermoelectric properties)

GRISHANIN, Ye.I.; PUGACHEVA, Ye.V.

Calculating the efficiency of control rods containing a moderator.
Atom. energ. 16 no.3:238-244 Mr '64. (MIRA 17:3)

GOGOL', L.G.; BELIKOVA, V.P.; SUSHKINA, A.G.; KAYKINA, V.G.; PUGACHEVA, Z.F.

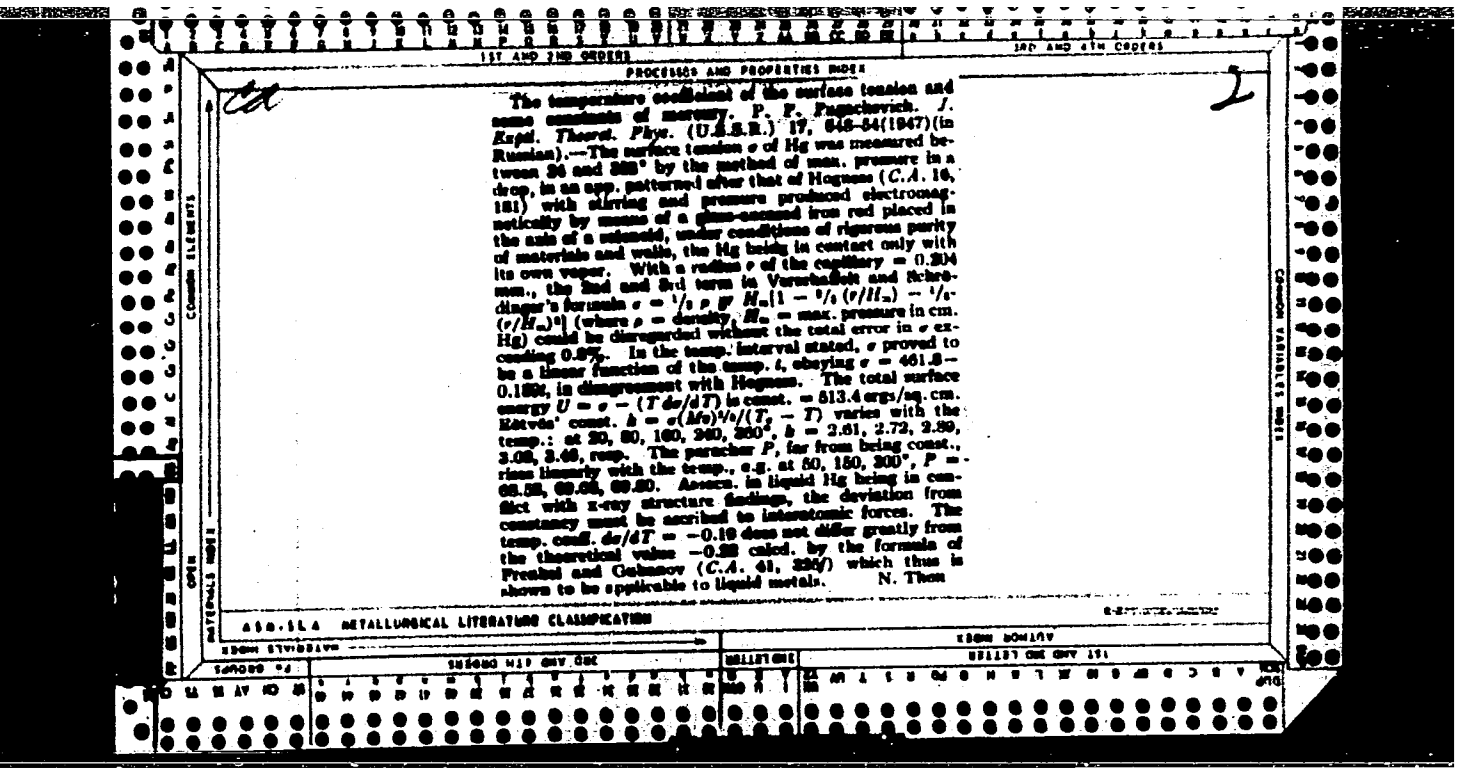
Characteristics of a typhoid fever outbreak at an industrial enterprise. Trudy TSIU 63:35-37 '64. (MIRA 18:5)



CA

1

An automatic apparatus for the production of distilled water. P. P. Pugachevich (Moscow State Univ., Sci. Research Inst. of Physics). *Zavodskaya Lab.* 12, 762 (1946). W. R. Henn



PROCESSES AND PROPERTIES INDEX

The temperature coefficient of the surface tension and some constants of mercury. P. F. Papaschevich. *J. Exptl. Theoret. Phys.* (U.S.S.R.) 17, 848-54(1947)(in Russian).—The surface tension σ of Hg was measured between 24 and 380° by the method of max. pressure in a drop, in an app. patterned after that of Hogness (*C.A.* 16, 181) with stirring and pressure produced electromagnetically by means of a glass-encased iron rod placed in the axis of a solenoid, under conditions of rigorous purity of materials and walls, the Hg being in contact only with its own vapor. With a radius r of the capillary = 0.204 mm., the 2nd and 3rd term in Vernschaft and Schrödinger's formula $\sigma = {}^1/_8\, \rho\, g\, H_m[1 - {}^1/_6\,(r/H_m) - {}^1/_8\,(r/H_m)^2]$ (where ρ = density, H_m = max. pressure in cm. Hg) could be disregarded without the total error in σ exceeding 0.8%. In the temp. interval stated, σ proved to be a linear function of the temp. t, obeying $\sigma = 461.8 - 0.155t$, in disagreement with Hogness. The total surface energy $U = \sigma - (T\, d\sigma/dT)$ is const. = 513.4 ergs/sq. cm. Eötvös' const. $k = \sigma(M\rho)^{2/3}/(T_c - T)$ varies with the temp.: at 20, 80, 160, 240, 320°, k = 2.61, 2.72, 2.89, 3.08, 3.46, resp. The parachor P, far from being const., rises linearly with the temp., e.g. at 50, 150, 300°, P = 68.58, 69.68, 69.80. Assocn. in liquid Hg being in conflict with x-ray structure findings, the deviation from constancy must be ascribed to interatomic forces. The temp. coeff. $d\sigma/dT$ = −0.19 does not differ greatly from the theoretical value −0.22 calcd. by the formula of Prenkel and Gubanov (*C.A.* 41, 220*f*) which thus is shown to be applicable to liquid metals. N. Thon

A13-51A METALLURGICAL LITERATURE CLASSIFICATION

PUGACHEVSKIY, G.F., aspirant; NOVODEREZHKIN, P.I., prof.

System for sun exposure test of textile fabrics. Tekst. prom. 24 no.9:60-61 S '64. (MIRA 17:11)

1. Kafedra tovarovedeniya promyshlennykh tovarov L'vovskogo torgovo-ekonomicheskogo instituta.

PUGACHEVICH, P. AND KONSTANTINOV, V.

"Elastic and Plastic Properties of Calcium Lubricants," Dok. AN, 57, No. 8, 1947

PUGACHEVICH, P. P. [redacted]

USSR/Chemistry - Solubility
Chemistry - Metals

Apr 1948

PA 67T18

"Solubility of Metals and Generalized Moment," V.K. Semenchenko, P.P. Pugachevich, Moscow State U imeni M.V. Lomonosov; Sci Res Inst of Phys, Moscow, 4 pp

"Zhur Fiz Khim" Vol XXII, No 4

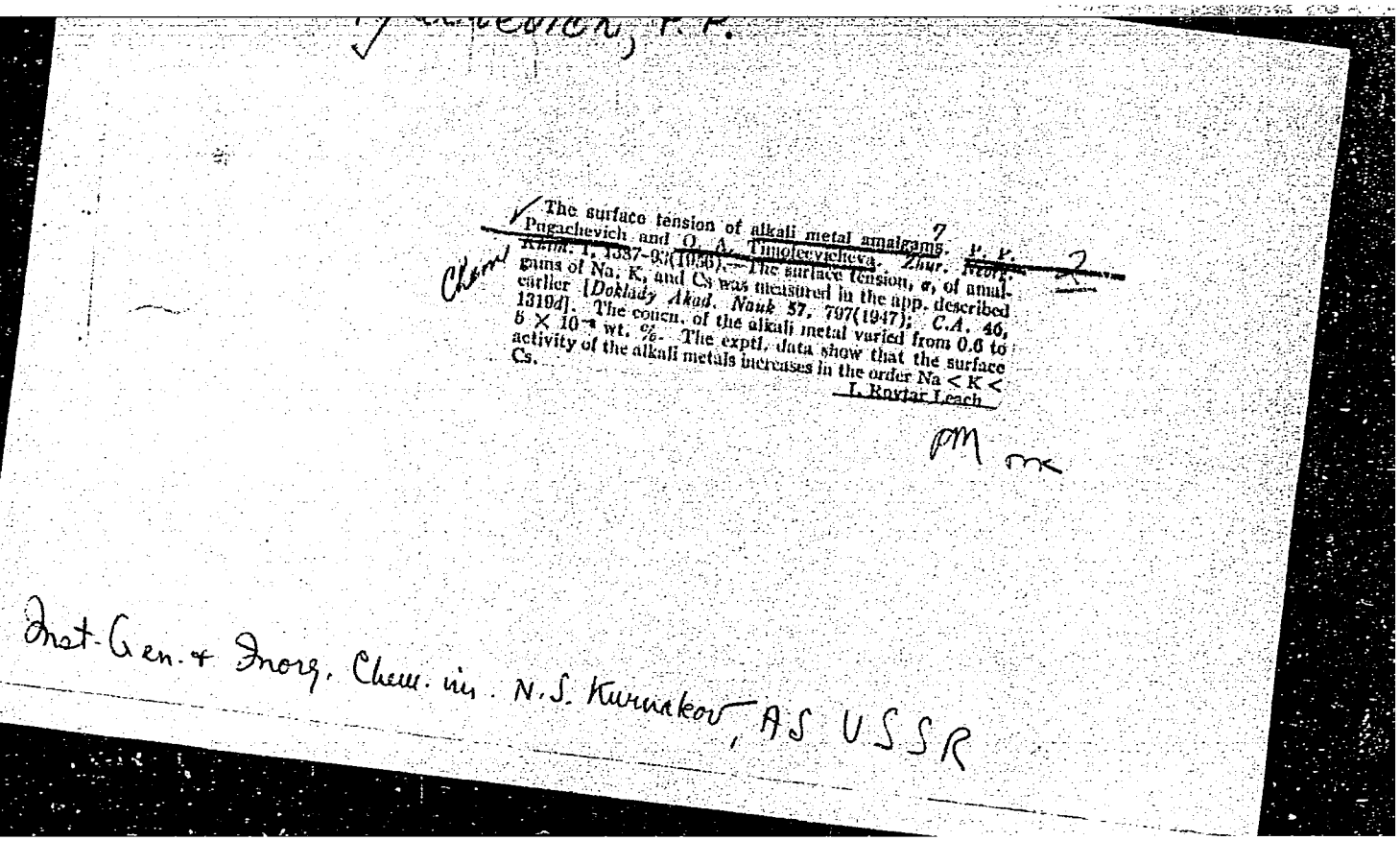
Graphic method to calculate the solubility of Na.Au, Ag, As. Ca, Bi, Cu, and Si in various metals. Makes use of state diagrams. Shows how the generalized moment can be determined from the state of the metal, and the compressibility curve or the curve showing [redacted]

67T18

USSR/Chemistry - Solubility (Contd) Apr 1948

thermal expansion. Submitted 4 Jul 1947.

67T18



√ The surface tension of alkali metal amalgams. P. V. Pugachevich and O. A. Timofeyvicheva. *Zhur. Neorg. Khim.* 1, 1537-9(1956).—The surface tension, σ, of amalgams of Na, K, and Cs was measured in the app. described earlier [*Doklady Akad. Nauk* 57, 707(1947); *C.A.* 46, 1310*d*]. The concn. of the alkali metal varied from 0.6 to 5×10^{-4} wt. %. The exptl. data show that the surface activity of the alkali metals increases in the order Na < K < Cs.
I. Roytar Leach

Chem

pm mk

Inst. Gen. & Inorg. Chem. im. N.S. Kurnakov, AS USSR

PUGACHEVICH, P.P. CAND PHYSICOMATH SCI

Dissertation: "Thermal Coefficient of the Surface Tension os Mercury and Temperature Dependence of the Adsorption of Alkaline Metals in Amalgams."

11 May 49
Moscow Order of Lenin State V imeni M.V. Lomonosov.

SO Vecheryaya Moskva
Sum 71

PUGACHEVICH, P. P.

PA 196T20

USSR/Chemistry - Mercury — Nov 51
Alkali Metal Amalgams

"Experimental Study of Surface Tension of Metallic Solutions. 1. Temperature Dependence of Surface Tension of Mercury and Sodium and Potassium Amalgams," P. P. Pugachevich, Moscow State U imeni M. V. Lomonosov and Inst of Gen and Inorg Chem, Acad Sci USSR

"Zhur Fiz Khim" Vol XXV, No 11, pp 1365-1373

Using app developed by author, measured surface tension of pure Hg at 20-350°C, in which temp range surface tension was found not to

196T20

USSR/Chemistry - Mercury (Contd) — Nov 51

be linear function of temp. Measured surface tension of Na and K amalgams of different concns in same temp range. Comparison of exptl results with conclusions of V. K. Semenchenko's theory of surface phenomena in solns showed that in most cases expts verified conclusions.

(CA 47 no.17:8443 '53)

196T20

BTR

26

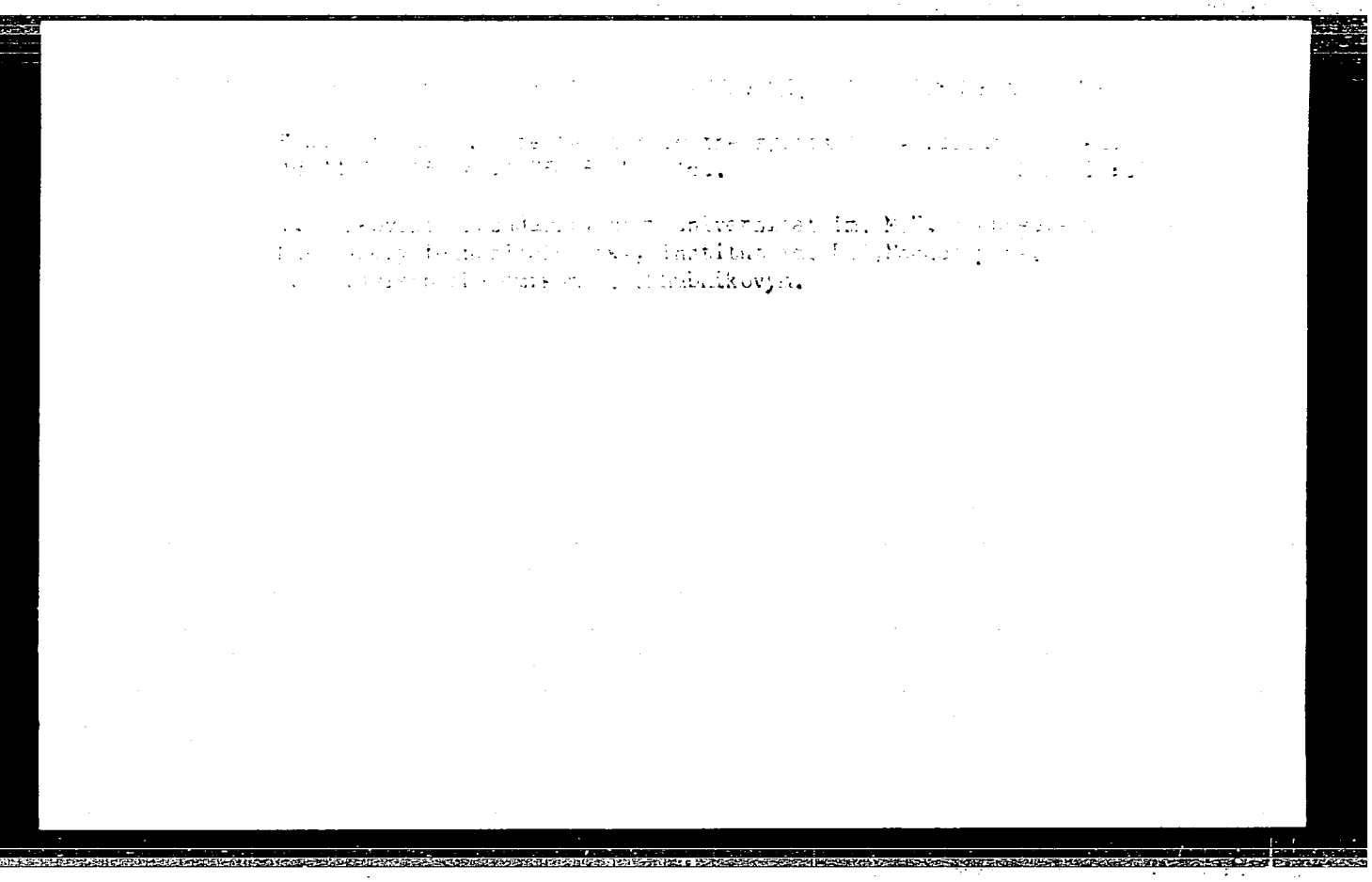
8631* Experimental Investigation of the Surface Tension of Calcium Amalgams. (In Russian.) P. P. Pugachevich and O. A. Timofeevichova. *Doklady Akademii Nauk SSSR*, new ser., v. 71, Aug. 11, 1951, p. 831-832.
Includes diagram of apparatus and graph of results.

C.A.

2

Experimental study of the surface tension of potassium amalgam. P. P. Pugacheyich and O. A. Timofeevicheva. *Doklady Akad. Nauk S.S.S.R.* 79, 831–3(1951).—The surface tension, σ, was measured by the dropping method in a closed app. in vacuo. At 20°, a K content of 5×10^{-5} wt. % produces a sharp fall of σ from 470 to 415 dynes/cm. Further increase of the K content causes a much slower decrease of σ. Between 0.1 and 0.6 at. % K, σ falls linearly from 390 to 375 dynes/cm.

N. Thon



USSR/Chemistry - Bismuth 1 Sep 52

"Temperature and the Surface Tension of Bismuth and Its Alloys of Sodium and Potassium," P. P. Pugachevich, I. P. Altynov

"Dok Ak Nauk SSSR" Vol 86, No 1, pp 117-119

The surface tension of bismuth was measured in the temp range of 270-500°. Addn of small amts of sodium or potassium decreases the surface tension of the bismuth. Presented by Acad I. I. Chernyayev 28 Jun 52.

234T22

PUGACHEVICH, P.P.

6725 AEC-tr-2497

AN EXPERIMENTAL INVESTIGATION OF THE SURFACE TENSION OF SODIUM AMALGAMS. P. P. Pugachevich and O. A. Timofeevicheva. Translated by F. L. Yagger from Doklady Akad. Nauk S.S.R. 94, 285-7(1954). 4p.

Results are reported of the experimental investigation of the surface tension of sodium amalgam containing from 8×10^{-6} to 0.284 at.% of Na. The surface tension measurements were conducted at 22°C under high vacuum. Surface tension of Hg drops by 2 to 3 dynes/cm even at 8×10^{-6} at.% Na (1 gr Na per 10 tons of Hg). In contrast to previous works, no especially small values on the surface tension isotherm has been observed. It was concluded that the adsorption scheme in metallic solutions is much simpler than was previously suggested. (R.V.J.)

Pugachevich, P.P.

602
SURFACE TENSION IN DILUTED-TO-CAPACITY AMALGAMS OF ALKALI METALS. P. P. Pugachevich and O. A. Timofeevicheva. (Kurnakov Inst. of General and Inorganic Chemistry.). Doklady Akad. Nauk S.S.S.R. 104, 98-100(1955) Sept. 1. (In Russian)

The surface tension of 250 amalgams of sodium, potassium, and cesium containing from 6×10^{-5} to 0.13 wt.% dissolved metal was tested with improved apparatus. (R.V.J.)

(1)

SEMENCHENKO, Vladimir Ksenofontovich; PUGACHEVICH, P.P., redaktor; NEGRIMOVSKAYA, R.A., tekhnicheskiy redaktor

[Surface phenomena in metals and alloys] Poverkhnostnye iavleniia v metallakh i splavakh. Moskva, Gos. izd-vo tekhniko-teoret. lit-ry, 1957. 491 p. (MIRA 10:5)
(Surfaces (Technology))

Puc Achevich, P.P

JOURNAL OF PHYSICAL CHEMISTRY

Vol XXXI, Nr 3, March, 1957

2

AN AUTOMATIC EXTRACTOR FOR THE ANALYSIS OF AMALGAMS

P. P. Pugachevich

Summary

An automatic extractor for the analysis of amalgams is described in which a sample of the amalgam is dispersed into myriads of fine droplets, each of which is washed with acid. The extractor can also be used for the chemical cleansing of small quantities of mercury.

PUGACHEVICH, P.P.

Work with alkali metals [with summary in English]. Zhur.fiz. khim. 31 no.9:2140-2142 S '57. (MIRA 11:1)

1.Akademiya nauk SSSR Institut obshchey i neorganicheskoy khimii im. N.S. Kurnakova.
(Alkali metals)

Pugachevich, P.P.

AUTHOR PUGACHEVICH P.P., LAZAREV V.B. PA - 2918

TITLE Surface tension of ternary metal solutions Hg - Cd - K at 22° C. (Poverkhnostnoye natyazheniye troynykh metallicheskikh rastvorov Hg - Cd - K pri 22°.- Russian)

PERIODICAL Doklady Akademii Nauk SSSR 1957, Vol 113, Nr 1, pp 127-129 (U.S.S.R.)

Received: 6/1957 Reviewed: 7/1957

ABSTRACT Many phenomena of the influence of admixtures on the properties of solid and liquid poly-component metal solutions can apparently be explained by studying the surface tension of such smeltings. In the case of iron alloys the influence of admixtures and of gases has hitherto usually been investigated by assumming the basic composition of the alloy to be unchargeable. It may be assumed, that the phenomena of absorption in ternary metal solutions will be little different from similar phenomena in other classes. It will be of special interest to study the case in which one of the diisolved metals possess surface activity with respect to the solvent, whereas the other has no surface activity. It is to be expected in the case of specific concentrations of the component with surface - activity (buffer-concentration according to Semenchenko) that the surface tension of the ternary

CARD 1/3

Surface tension of ternary metal solutions Hg - Cd - K at 22° C.

metal solution is independent of the concentration of the component lacking surface activity. This implies that the same laws are to be exspected for the modification of surface tension as have been observed by W. Seit, S. Politzsch and V.K. Semenchenko in the study of binary dielectric solutions in the presence of electrolytes. For the purpose of verifying the conclusions of Semenzhenko's theory of the modification of the surface tension of solutions of various classes, the authors investigated the surface tension of the system of Hg -Cd -K. Potassium is surface-active with respect to mercury, whereas Cadmium is supposed to augment the surface tension of mercury. If the components were chosen in the right way, the buffer-concentration could be found by studying surface tension. The authors established that in the case of various concentrations of potassium surface tension is indepentend of the concentration of the surface-inactive Cadmium. This concentration of potassium corresponds to the buffer-concentration Cadmium has the opposite effect in the case of solutions that contain an amount of potassium exceeding the buffer-concemn-

PA - 2918

Surface tension of ternary metal solutions Hg - Cd - K at 22°C.

tration, i.e. the Cadmium - concentration decreases surface tension. Furthermore, the authors found out that Cadmium increases the surface tension of mercury and therefore is surface-inactive with respect to mercury. Consequently, the authors evere able to confirm the conclusions of the molecular theory of surface phenomena developed by Semenchenko on common absorption processes in polycomponent solutions from different classes. (With 4 illustrations and 13 citations from published works.)

ASSOCIATION: Institute for General and Anorganic Chemistry "N.A.KURSANOV" of the Academy of Sciences of the USSR.
(Institut obshchey i neorganicheskoy khimii im N.A. Kursanova Akademii Nauk SSSR.)

PRESENTED BY: I.I. Chernyayev, member of the Academy.

SUBMITTED: 27.10. 1956.

AVAILABLE: Library of Congress.

CARD 3/3

Pugachevich, P.P

AUTHORS: Pugachevich, P. P., Lazarev, V. B. 20-3-24/52

TITLE: Surface Phenomena in Hg - Cd-K, Hg -Cd - Cs Trinary Metallic Solutions at 22° (Poverkhnostnyye yavleniya v troynykh metallicheskikh rastvorakh Hg-Cd-K, Hg-Cd-Cs pri 22°)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 3, pp. 445-447 (USSR)

ABSTRACT: The authors had hitherto investigated the surface tension σ of 135 solutions Hg-Cd-Cs at 22° by means of a device described in a previous work (Ref. 2). These solutions contain from 0 to 6.98 atom percent cadmium and from 0 to 0.036 atom percent cesium. In this system also a concentration buffer state was observed. A comparison of the isotherms of the surface tension of the trinary metallic solutions of the isotherms of aqueous solutions of alcohols in the presence of electrolytes furnished additional confirmation of the principal result of the molecular theory of surface tensions developed by V. K. Semenchenko (Ref. 4-6). From 2 diagrams mentioned here the following may be seen: In the trinary metal solutions (as well as in the aqueous solutions of dielectrica in the presence of surface-inactive components) the buffer point is shifted in the

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direction of lower concentrations. The amount of this shifting depends on the degree to which the surface-active component is replaced in the solution under investigation by a component with greater surface activity. Next, some information is given concerning the theory developed by V. K. Semenchenko (Ref. 4, 5, 6). From this theory it follows, among other things; that in a trinary system, one component of which is surface-active with respect to the solvent (while the other component is surface-inactive), the adsorption of the surface-active component is positive and passes through a maximum. The maximum value of adsorption grows with growing concentration of the surface-inactive substance. There are 4 figures and 8 references, 6 of which are Slavic.

ASSOCIATION: Institute for General and Inorganic Chemistry AN USSR (Institut obshchey i neorganicheskoy khimii Akademii nauk SSSR)

Surface Phenomena in Hg - Cd-K, Hg -Cd - Cs Trinary Metallic Solutions at 22° 20-3-24/52

PRESENTED: May 16, 1957, by I. I. Chernyayev, Academician

SUBMITTED: May 14, 1957

AVAILABLE: Library of Congress

Card 3/3

5 (4)

AUTHORS: Pugachevich, P. P., Yashkichev, V. I. SOV/62-59-5-7/40

TITLE: Temperature Dependence of the Surface Tension of Copper (Temperaturnaya savisimost' poverkhnostnogo natyazheniya medi)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 5, pp 806 - 810 (USSR)

ABSTRACT: According to the authors there exist about 40 papers only on surface tension of metals and alloys; and only ten of them are devoted to surface tension at temperatures higher than 1000°. A short enumeration of the papers and an information about the investigation methods used are given. The two Soviet authors Klyachko (Ref 5) and Kunin (Ref 11) are among the authors mentioned (Refs 1-11). The results obtained by the various authors are contradictory (Fig 1). In this work the Sugden method (Ref 14) is used in the determination of the surface tension of Cu, which the maximum pressure in the bubbles is measured. In principle, the method is based on the use of two capillaries of various thickness so that the hydrostatic pressure being formed with dipping the capillary into the melt need not be considered in the calculation; also, the density of the melt need not be determined precisely. Sugden did not carry out his investiga-

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tions at temperatures higher than 1000°. The apparatus used in the investigation is shown in figure 2 and described in detail. The pressure in the gas bubbles was determined by means of a bellow-sealed manometer of V. A. Sokolov construction, the temperature of molten copper by means of an optical pyrometer, and the surface tension according to the formula

$$\sigma = \frac{1}{2} \frac{p_1 - p_2}{\frac{1}{x_1} - \frac{1}{x_2}}$$

The values of σ at various temperatures are summarized in a table. p_1 and p_2 are the maximum pressures in the gas bubbles which are formed at the capillaries; x_1 and x_2 are the diameters of the two capillaries. The investigations were carried out in a temperature range between 1100 and 1600°. The maximum value of the surface tension of the copper melt was observed at 1300° (Fig 2). The polythermal maximum of the surface tension mentioned in publications also in connection with other metals is explained by 1) the presence of surface active impurities on the melt surface and 2) the property of metals in liquid phase to remain in a pseudocrystalline state; with tem-

perature increase the liquid structure approaches the state of tightest structure, the surface tension increases. With further temperature increase the liquid becomes homogeneous and the surface tension changes "normally", i.e. it decreases with rising temperature. With further temperature increase the liquid becomes homogeneous, and the surface tension changes in the "normal" manner, i.e. it drops with rising temperature. There are 3 figures, 1 table, and 22 references, 7 of which are Soviet.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova (Institute of General and Inorganic Chemistry im. N.S. Kurnakov of the Academy of Sciences, USSR)

SUBMITTED: July 24, 1957

5(4) 18(6)

AUTHORS: Timofeyovicheva, O. A., Pugachevich, P. P. SOV/20-124-5-37/62

TITLE: The Surface Stress of Metallic Indium (Poverkhnostnoye natyazheniye metallicheskogo indiya)

PERIODICAL: Doklady Akademii nauk SSSR 1959 Vol 124 Nr 5, pp 1093-1094 (USSR)

ABSTRACT: The present paper investigates the temperature dependence of the surface stress of indium in connection with the solution of some problems arising in the production of semiconductors. Short reference is made to some earlier papers dealing with this subject. The perfectioned method of 2 capillaries (Ref 2) requires the use of a noble gas. The wetting angle between the melted indium and the material of the capillary was here assumed to be 180° and to be independent of temperature. This assumption holds only in first approximation for some pure metals but not in the case of measurement of the surface stress of metallic solutions containing metal-active additions. Therefore the authors based measurements of the surface stress of indium and its alloys upon the method of maximum pressure in a drop. With this method it is not necessary to take the wetting angle on the boundary into account. For these measure-

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ments the authors used gravitation devices made from molybdenum glass at high-vacuum conditions. Carrying out of measurements and the indium samples used for the experiments are described in short. The authors carried out about 500 individual investigations of the surface stress of indium within the interval of from 170 to 500° and obtained the following result: Surface stress is a linear function of temperature and may be represented (by the method of the least squares) by the equation $\sigma = 569.3 - 0.085t$. Finally, the authors compare their results with those obtained by other authors. There are 2 figures and 4 references.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute for General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of Sciences, USSR)

PRESENTED: October 25, 1958, by I. I. Chernyayev, Academician

SUBMITTED: October 21, 1958

PUGACHEVICH, P.P.

Gravitation gas apparatus for measuring surface tension.
Zhur. fiz. khim. 38 no.5:1377-1379 My '64.
(MIRA 18:12)

1. Moskovskiy khimiko-tekhnologicheskiy institut imeni Mendeleyeva. Submitted July 15, 1963.

ACC NR: AR6035099 SOURCE CODE: UR/0137/66/000/008/A005/A005

AUTHOR: Ibragimov, Sh. I.; Pokrovskiy, N. L.; Pugachevich, P. P.; Semenchenko, V. K.

TITLE: Investigation of the surface tension of the tin-bismuth and tin-lead systems

SOURCE: Ref. zh. Metallurgiya, Abs. 8A39

REF SOURCE: Sb. Poverkhnostn. yavleniya v rasplavakh i voznikayushchikh iz nikh tverd. fazakh. Nal'chik, 1965, 169-276

TOPIC TAGS: tin, bismuth system, tin lead system, surface tension, temperature coefficient, gravitation method

ABSTRACT: The surface tension σ of the Sn—Bi (14 alloys) and Sn—Pb (13 alloys) systems has been investigated by the gravitational method. The isotherms and polytherms obtained did not show extreme or bend points. The eutectic fields of both systems were carefully analyzed. The study of the relation $\sigma=f(t)$ revealed a number of new phenomena. With increased concentration of one of the components, a regular decrease of the temperature coefficient of the

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ACC NR: AR6035099

surface tension $d\sigma/dt = K$ is observed. For the Sn—Bi system, K passes through zero twice, while for the Sn—Pb system, the values $K < 0$. Orig. art. has: 5 figures. Bibliography of 7 titles. G. Fents. [Translation of abstract] [NT]

SUB CODE: 11/

ZABUMIN, P.N.; [illegible], I.P.; NGUYEN FUNG

...perature dependence of the surface energy of transition metals. Zhur.fiz.khim. 39 no.10:2591-2595 O '65.

(MIRA 18:12)

1. Kabardino-Balkarskiy gosudarstvennyy universitet i Moskovskiy khimiko-tekhnologicheskiy institut imeni Mendeleyeva. Submitted July 9, 1964.

L 59240-65 EWT(m)/EWP(t)/EWP(b) IJP(c) JD

ACCESSION NR: AP5015012 UR/0078/65/010/006/1297/1299
546.284'131 + 546.27'131

AUTHOR: Nisel'son, L.A.; Pugachevich, P.P.; Sokolova, T.D.; Bederdinov, R.A.

TITLE: Density, viscosity, and surface tension of silicon tetrachloride and trichlorosilane

SOURCE: Zhurnal neorganicheskoy khimii, v. 10, no. 6, 1965, 1297-1299

TOPIC TAGS: silicon tetrachloride, trichlorosilane, chloride density, chloride viscosity, chloride surface tension

ABSTRACT: The article continues a series of studies on the thermophysical properties of halides. Silicon tetrachloride and trichlorosilane are important source materials for the preparation of high-purity silicon. Data on their properties as reported in the literature are contradictory. In this report, the authors present the results of measurements of the density, viscosity, and surface tension of $SiCl_4$ and $SiHCl_3$ between zero C and a temperature slightly above their normal boiling points. The chlorides studied were thoroughly purified by chemical means and by distillation. Density was measured in quartz pycnometers, viscosity in a capillary viscometer, and surface tension by the method of maximum pressure in a bubble. All the measurements were carried out in sealed devices in order

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ACCESSION NR: AP5015012

to exclude the adverse effect of moisture. The dat[illegible]tained are tabulated and illustrated with graphs; they were also treated by the method of least squares, and are expressed in the form of exponential interpolation equations. Orig. art. has: 2 figures and 6 tables.

ASSOCIATION: None

SUBMITTED: 03Aug63 ENCL: 00 SUB CODE: IC

NO REF SOV: 006 OTHER: 008

Card 2/2

83564

S/020/60/134/001/016/021
B004/B060

9,4340

AUTHORS: Lazarev, V. B., Pugachevich, P. P.

TITLE: The Temperature Dependence of the Surface Stress of Germanium

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 1, pp. 132 - 133

TEXT: By way of introduction, the authors discuss the data published on the surface stress of germanium and the errors involved in the methods applied. They determined the surface stress by measuring the maximum pressure in a gas bubble according to the theory developed by M. Cantor (Ref. 8). The capillaries required for the purpose were prepared from spectroscopically pure graphite. Germanium single crystals of a resistivity of 20 ohm.cm were heated in a vacuum furnace through which argon was fed. The values for the density of the molten Ge required for the calculation of the surface stress, σ, were taken from Ref. 13, and extrapolated up to 1400°C. The maximum error for σ was 1%. It was found that $\sigma = 621.4 - 0.26(t^\circ - 936^\circ)$, where t° is the temperature in

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The Temperature Dependence of the Surface Stress of Germanium

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degrees centigrade, and 936°C is the melting point of Ge according to Ref. 14. The value of 621.4 dynes/cm holding for this temperature is in good agreement with the value calculated by S. N. Zadumkin (617 dynes/cm). As opposed thereto, the temperature coefficient $d\sigma/dT = -0.21$, determined by the authors experimentally, deviates markedly from Zadumkin's value (-0.054). This may be due to the structural change of the melt, which was not considered by Zadumkin. The experimental data are given in Table 1 and graphically reproduced in Fig. 1. There are 1 figure, 1 table, and 15 references: 9 Soviet, 4 US, 1 British, 1 German, and 1 French.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of Sciences USSR)

PRESENTED: April 13, 1960, by I. I. Chernyayev, Academician

SUBMITTED: April 11, 1960

86705
S/076/60/034/011/020/024
B004/B064

11,3950

AUTHORS: Pugachevich, P. P. and Lazarev, V. B. (Moscow)

TITLE: A Device for Measuring the Surface Tension of Melts at High Temperatures

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 11, pp. 2607-2609

TEXT: The apparatus shown in Fig. 1 is used to determine the surface tension of melts at temperatures of up to 1600-1800°C by measuring the maximum gas bubble pressure. The cylindrical cover 1 is sealed with the rubber ring 3 and screwed into the plate 5 with the screw bolt 4; the plate is firmly fixed to the base 6. The stand 7, the upper part of which is made of refractory material, the lower one of heat-resistant steel, is connected with 5 through the brass bellow 9, and is lifted by the appliance 5. It is fixed with the screws 13,14. The height of 7 is read by means of the rod 8 and the nonius 11 which are on plate 12. The crucible 15 with the substance to be examined 16 stands on the stand. The substance is molten in a vacuum by means of a cylindrical heater 17 made of a 0.1 mm

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A Device for Measuring the Surface Tension of Melts at High Temperatures

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thick tantalum plate which is fed by the power current of an ОСУ-20 (OSU-20) step-down transformer. The current is supplied through the water-cooled feeding pipes 18 and 19 which are insulated against 5. The molybdenum screens 20 on the base 21 are used to prevent thermal radiation. Temperature is measured either with a thermocouple or with a pyrometer through the sight hole 27. Two capillaries 25 and 26 of different diameters are dipped into the melt. By means of lithium heated to 300°C and solid CO_2, argon purified with alcohol is passed through the capillaries, and the maximum pressure is determined with a magnetic diaphragm gauge. The surface tension is determined from an equation given by S. Sugden (Ref. 2). There are 2 figures and 2 non-Soviet references.

ASSOCIATION: Akademiya nauk, Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova (Academy of Sciences of the USSR, Institute of General and Inorganic Chemistry imeni N. S. Kurnakov)

SUBMITTED: June 27, 1960

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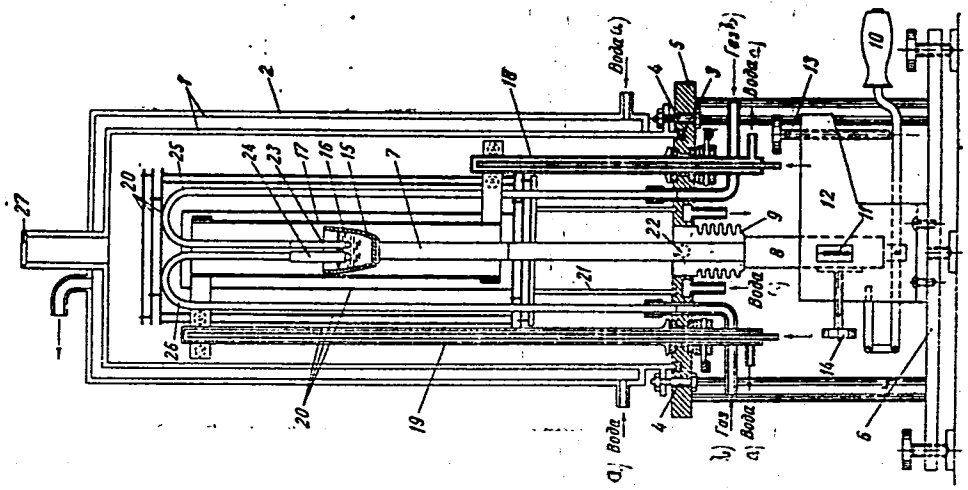
Legend to Fig. 1: a) water; b) gas



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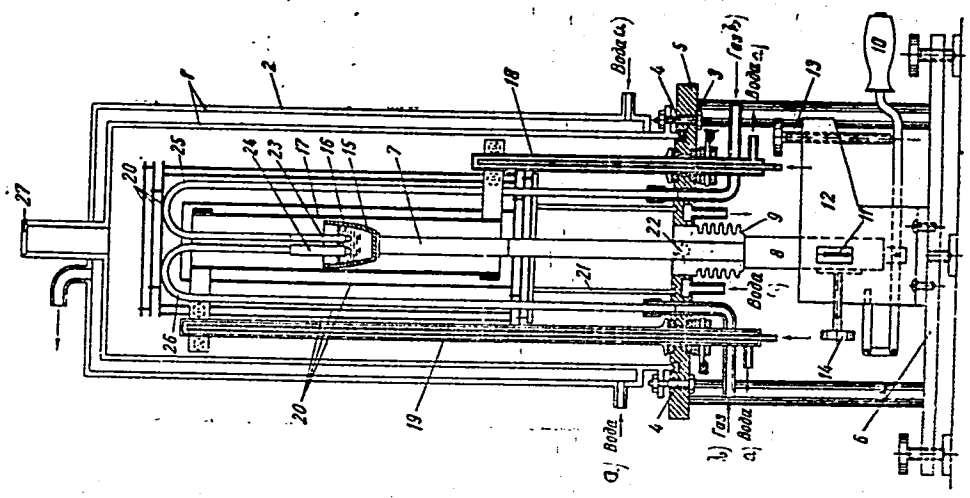
Legend to Fig. 1: a) water; b) gas



Card 3/3

LAZAREV, V.B.; PUGACHEVICH, P.P.

Limiting surface activity of ternary solutions. Zhur. fiz. khim. 35 no.2:314-318 F '61. (MIRA 16:7)

1. Institut obshchey i neorganicheskoy khimii imeni Kurnakova AN SSSR.

(Systems (Chemistry)) (Surface chemistry)

PUGACHEVICH, P.P.

Improved gas apparatus with a single capillary for measuring surface tension. Zhur.fiz.khim. 36 no.5:1107-1109 My '62. (MIRA 15:8)

1. Institut obshchey i neorganicheskoy khimii imeni N.S.Kurnakova AN SSSR.

(Surface tension)

PUGACHEVICH, Petr Pavlovich; BELEN'KAYA, S.M., red.; SHPAK, Ye.G., tekhn. red.

[Techniques of work with mercury under laboratory conditions] Tekhnika raboty so rtut'iu v laboratornykh usloviiakh. Moskva, Gos. nauchno-tekhn.izd-vo khim.lit-ry, 1961. 140 p. (MIRA 14:12)
(Mercury)

PUGACHEVICH, P.P.; LAZAREV, V.B.

Empirical study of the surface tension of metallic solutions. Part 3: Surface phenomena in the ternary matallic solutions Hg - Cd - K and Hg - Cd - Cs at 22°. Zhur. fiz. khim. 35 no.3:530-534 Mr '61. (MIRA 14:3)

1. Akademiya nauk SSSR, Institut obshchey i neorganicheskoy khimii im. N.S. Kurnakova.

(Surface tension) (Amalgams)

TIMOFEYEVICHEVA, O.A.; PUGACHEVICH, P.P.

Temperature dependence of the surface tension of gallium. Dokl. AN SSSR 134 no.4:840-843 O '60. (MIRA 13:9)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova Akademii nauk SSSR. Predstavleno akad. I.I.Chernyayevym.
(Gallium) (Surface tension)